

## ABSTRACT

### EARTHWORM POPULATION AND BIOMASS DUE TO APPLICATION OF BIOCHAR AND CHICKEN MANURE IN ULTISOLS IN THE 3<sup>rd</sup> GROWING SEASONS OF CORN (*Zea mays* L.)

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Ultisols have problems with soil organic matter and low nutrients, that making soil fertility low. High or low population and earthworm biomass is one indicator of the fertility level of a soil. Efforts to increase soil fertility can be done by giving biochar and chicken manure. This study aims to study the effect of biochar and chicken manure application on earthworm population and biomass and study the correlation between earthworm population and biomass with soil temperature, soil organic carbon, soil moisture content, soil pH, and corn crop production components. This research method uses a non-factorial Randomized Block Design (RBD) with 4 groups and 4 treatments, namely, B<sub>0</sub> = control, B<sub>1</sub> = biochar 5 tons ha<sup>-1</sup>, B<sub>2</sub> = chicken manure 5 tons ha<sup>-1</sup>, and B<sub>3</sub> = biochar 5 tons ha<sup>-1</sup> + chicken manure 5 tons ha<sup>-1</sup>. The data were analyzed by variety analysis, followed by a 5% BNT test and using a boxplot chart to see the distribution of earthworm population and biomass data, as well as a correlation test between earthworm population and biomass with supporting variables. The results showed that the application of biochar and chicken manure had no effect on earthworm population and biomass at the entire time of observation. There is a negative correlation between soil water content with earthworm populations and soil temperature with earthworm biomass. There is a positive correlation between soil pH with earthworm populations and biomass, but there is no correlation between earthworm populations and biomass with corn crop production components. The results showed that the types of worms has found in the study field consisted of two families, namely *Megascolecidae* and *Glossoscolecidae*.

Keywords: biochar, chicken manure, corn, earthworm.

## ABSTRAK

### POPULASI DAN BIOMASSA CACING TANAH AKIBAT APLIKASI BIOCHAR DAN KOTORAN AYAM DI TANAH ULTISOL PADA PERTANAMAN JAGUNG (*Zea mays* L.) MUSIM TANAM KE-3

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Tanah Ultisol memiliki permasalahan bahan organik tanah dan unsur hara rendah sehingga membuat kesuburan tanah menjadi rendah. Tinggi atau rendahnya populasi dan biomassa cacing tanah menjadi salah satu indikator tingkat kesuburan suatu tanah. Upaya untuk meningkatkan kesuburan tanah dapat dilakukan dengan cara pemberian biochar dan kotoran ayam. Penelitian ini bertujuan untuk mempelajari pengaruh aplikasi biochar dan kotoran ayam terhadap populasi dan biomassa cacing tanah dan mempelajari korelasi antara populasi dan biomassa cacing tanah dengan suhu tanah, C-organik tanah, kadar air tanah, pH tanah, dan komponen produksi tanaman jagung. Metode penelitian ini menggunakan Rancangan Acak Kelompok (RAK) non faktorial dengan 4 kelompok dan 4 perlakuan yaitu, B<sub>0</sub> = kontrol, B<sub>1</sub> = biochar 5 ton ha<sup>-1</sup>, B<sub>2</sub> = kotoran ayam 5 ton ha<sup>-1</sup>, dan B<sub>3</sub> = biochar 5 ton ha<sup>-1</sup> + kotoran ayam 5 ton ha<sup>-1</sup>. Data dianalisis dengan analisis ragam, dilanjutkan dengan uji BNT 5% dan menggunakan diagram *boxplot* untuk melihat sebaran data populasi dan biomassa cacing tanah, serta dilakukan uji korelasi antara populasi dan biomassa cacing tanah dengan variabel pendukung. Hasil penelitian ini menunjukkan bahwa aplikasi biochar dan kotoran ayam tidak berpengaruh nyata terhadap populasi dan biomassa cacing tanah pada seluruh waktu pengamatan. Terdapat korelasi negatif antara kadar air tanah dengan populasi cacing tanah dan suhu tanah dengan biomassa cacing tanah. Terdapat korelasi positif antara pH tanah dengan populasi dan biomassa cacing tanah, namun tidak terdapat korelasi antara populasi dan biomassa cacing tanah dengan komponen produksi tanaman jagung. Hasil menunjukkan bahwa jenis cacing yang ditemukan pada lahan penelitian terdiri dari dua famili, yaitu *Megascolecidae* dan *Glossoscolecidae*.

Kata kunci : biochar, cacing tanah, jagung, kotoran ayam.